

## CLAIMS

1. A process of reforming a quartz glass crucible, wherein the quartz glass crucible is reformed by an arc discharge generated by electrodes positioned around a rotational axis and configured to heat an inside surface of the crucible while the crucible is rotated, the process comprising:

arranging the electrodes in an electrode structure in which neighboring electrodes are positioned at regular intervals from each other in a ring-like configuration;

forming a stable ring-like arc between the neighboring electrodes, without generating a continuous arc between electrodes facing each other across a central portion of the ring-like configuration;

heating the inside surface of the crucible; and

removing one of a foreign substance located on the inside surface and a bubble located under the inside surface.

2. The process of claim 1, wherein the arranging step comprises:

arranging the electrodes in the electrode structure such that the neighboring electrodes are positioned at regular intervals in the ring-like configuration so as to have an absolute value  $\theta$  of a phase difference of alternating electric current in the range of  $90^\circ \leq \theta \leq 180^\circ$ .

3. The process of claim 1, wherein a radius  $r$  of the ring-like configuration around the rotational axis is at least  $\frac{1}{4}$  of a radius  $R$  of an open portion of the crucible, for at least a fixed time during arc heating.

4. The process of claim 1, wherein a diameter of the crucible is 28 to 40 inches.

5. The process of claim 1, wherein the quartz glass crucible is used for the pulling up of single crystal silicon.

6. The process of claim 2, wherein a diameter of the crucible is 28 to 40 inches.

7. The process of claim 2, wherein the quartz glass crucible is used for the pulling up of single crystal silicon.

8. The process of claim 2, wherein a radius  $r$  of the ring-like configuration around the rotational axis is at least  $\frac{1}{4}$  of a radius  $R$  of an open portion of the crucible, for at least a fixed time during arc heating.

9. The process of claim 8, wherein a diameter of the crucible is 28 to 40 inches.

10. The process of claim 8, wherein the quartz glass crucible is used for the pulling up of single crystal silicon.

11. The process of claim 3, wherein a diameter of the crucible is 28 to 40 inches.

12. The process of claim 3, wherein the quartz glass crucible is used for the pulling up of single crystal silicon.

13. A process of reforming a quartz glass crucible, comprising:  
one of mechanically removing a foreign substance on an inside surface of the crucible and removing a bubble just under the inside surface of the crucible by grinding;  
arranging electrodes in an electrode structure such that neighboring electrodes are positioned at regular intervals from each other in a ring-like configuration;  
forming a ring-like arc between neighboring electrodes; and  
fusing the inside surface of the crucible to be smoothed.

14. The process of claim 13, wherein a diameter of the crucible is 28 to 40 inches.

15. The process of claim 13, wherein the quartz glass crucible is used for the pulling up of single crystal silicon.